Integration of geological, geophysical and contaminant monitoring technologies for contaminated site investigation

Balbarini, Nicola; Rønde, Vinni Kampman; Maurya, Pradip Kumar; Klint, Knud Erik; Christiansen, Anders V.; Binning, Philip John

Publication date:
2017

Document Version
Peer reviewed version

Forslag til vintermøde / temadag 2017

Deadline: 15. september 2016 *(sendes som word-fil (ikke pdf) til atvlv@env.dtu.dk)*

Jeg har forslag til *(sæt kryds)*	__ Temadag 2017, 6. marts *(heldagsmøde om et givent emne – her bedes du også indikere en skitse til et program)* _x_ Et indlæg jeg gerne vil holde på Vintermødet 2017, 7. – 8. marts *(et 20 min. indlæg som en del af det samlede program)* __ En fagsession jeg gerne vil arrangere på Vintermødet 2017, 7. - 8. marts *(flere sammenhængende indlæg om et specialiseret emne – her bedes du endvidere indikere en programskitse)* __ En workshop jeg gerne vil arrangere på Vintermødet 2017, 7. – 8. marts *(korte oplæg – aktiv deltagelse af deltagerne – her bedes du endvidere indikere en programskitse)* __ Forslag om andre foredragsholdere eller emner til sessioner
Titel på indlæg	Integration of geological, geophysical and contaminant monitoring technologies for contaminated site investigation
Navn og titel på foredrags-holder	Nicola Balbarini, PhD student
Arbejdssted	DTU Miljø
Adresse	Bygningstorvet Bygning 115, 2800 Kongens Lyngby
E-mail	nbal@env.dtu.dk
Telefon	4525 1595
Navn og titel på evt. med-forslagsstiller(e) *(deltager til fuld pris)*	Vinni Rønde, PhD student, DTU Environment Pradip Maurya, PhD student, AU Knud Erik S. Klint, Senior researcher, GEUS Anders, V. Christiansen, Associate Professor, AU Poul L. Bjerg, Professor, DTU Environment Philip J. Binning, Professor, DTU Environment
Målgruppe *Hvem er den primære målgruppe?*	Regionsmedarbejdere, rådgivere, forskere

/fortsættes

	Udfyld venligst nedenstående i videst muligt omfang
Titel på indlæg *(gentages fra side 1)*	Integration of geological, geophysical and contaminant monitoring technologies for contaminated site investigation
Baggrund / indledning	Surface geophysical surveys allow to collect extended datasets of electrical resistivity and chargeability at low costs. Geophysical data are currently used for geological and hydrological characterization. The GEOCON project aim to integrate surface geophysical survey data with geological and contaminant concentration data for contaminated site investigation and monitoring. The GEOCON project is an on-going collaboration between DTU Environment, Aarhus University, GEUS, Orbicon, Region Midtjylland and Region Syddanmark.
Formål Hvad er formålet? Hvorfor er det relevant for tilhørerne? Hvad kan vi lære?	Develop a method for contaminated site investigation that integrates geological, geophysical, and contaminant concentration data. The method is applied at the site of Grindsted stream, where a contaminant plume with high ionic strength and high concentration of chlorinated solvents is discharging to the stream.
Metoder og datagrundlag F.eks. laboratorie-, pilot- og/eller feltundersøgelser eller modellering samt antal analyser, boringer, transekter, offentlige administrative aspekter, erfaringsopsamling mv.	Geological data are collected by borehole logs and sediment coring. At the same locations, geophysical loggings are performed to establish a correlation between hydrogeological and geophysical properties. 2D and 3D DCIP (Direct Current Induced Polarization) surveys and TEM (Transient ElectroMagnetics) are performed to collect geophysical data. Hydraulic conductivity values are measured by slug tests and sediment samples. PVPs (Point Velocity Probes) are installed at the site to measure groundwater flow velocity and direction. Chemical data are collected by 25 multilevel sampling points. Geological, hydrogeological, and contaminant transport models are developed in order to support the data collection and interpretation.
Resultater Hvad er interessant? Hvilke sammenhænge ses? Hvordan passer det med det forventede? Osv.	
Konklusion Vigtigste læringer – her oplistes de punkter, som du mener, at tilhørerne kan lære noget af – altså "take home messages"	The investigation at Grindsted stream site shows the potential of combining geophysical data collection with geological boreholes and water samples for contaminated sites investigation: • The comparison of geological and geophysical borehole logs allow establish a correlation between the properties of the soil and the electrical resistivity and chargeability • The combination of geological and geophysical data was used to develop a detailed geological model • Surface geophysical survey and hydrogeological data • Electrical resistivity was used to map electrical conductivity (EC) and ionic strength plumes

Tidshorisont Evt. igangværende projekt-resultater og konklusioner skal foreligge inden Vintermødet 2017	Additional data are collected in Summer and Autumn 2016. The data analysis are completed in Autumn and Winter 2016.
Andre bemærkninger	The presentation will be done in danish.
Illustration Indsæt gerne illustrerende figur, som viser resultater, proces eller lignende, som side 3	Figure 1: Comparison of electrical conductivity (EC) concentrations from water samples and electrical resistivity from DCIP along a profile where a contaminant plume is discharging to Grindsted stream.